BRUHAT BENGALURU MAHANAGARA PALIKE
Office of the Executive Engineer, Storm Water Drain Division, Dasarahalli.

Name of Work :- Construction of RCC culvert & U Shape drain for secondary SWD in Mallsandra Ward No.13

Pre-Measurements

Name of the Agency : M/s KVK Constructions
Agreement No. EE/SWD/DHZ/AGMT/04/2017-18 dated: 07/12/2017
Work Order No. EE/SWD/DHZ/WO/ 04/2017-18 dated: 07/12/2017

Sl. No.	Description	Unit	No.	L	B	D	Qty
	Measurements recorded on 12/05/2017						
3	Excavation of removal of silt mixed with sand, human excreta, garbage in slussy condition from Storm water drain in Bangalore City including disposing off the same as directed including cost of machinery labour, fuel etc., complete with all lead and lifts (By Mechanical Means) (RA as per MI SR 2014-15)						

Ch	Depth of silt	Bed width	Area	Avg. Area	Chainage int	Volume	Cumulative volume
Beside quarry opp to bus stand							
0	1.00	3.00	3.00	1.50	0.00	0.00	0.00
15	1.00	2.50	2.50	2.75	15.00	41.25	41.25
30	1.10	2.50	2.75	2.63	15.00	39.38	80.63
45	1.20	2.50	3.00	2.88	15.00	43.13	123.75
60	1.20	3.00	3.60	3.30	15.00	49.50	173.25
75	1.25	3.00	3.75	3.68	15.00	55.13	228.38
90	1.20	3.00	3.60	3.68	15.00	55.13	283.50
Measurements recorded on 15/05/2017							
D/s of Santosh Nagar pipe culvert							
0	1.00	3.00	3.00	1.50	0.00	0.00	0.00
15	1.00	3.00	3.00	3.00	15.00	45.00	45.00
30	1.10	3.00	3.30	3.15	15.00	47.25	92.25
Measurements recorded on 18/05/2017							
U/s of CD at Chikkabanavara Ry stn road							
0	1.00	1.50	1.50	0.75	0.00	0.00	0.00
15	1.00	1.50	1.50	1.50	15.00	22.50	22.50
30	1.00	1.50	1.50	1.50	15.00	22.50	45.00
					Total		420.75
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Sl. No.	Description	Unit	No.	L	B	D	Qty		
	Measurements recorded on 20/05/2017								
4	**Diversion of water course by providing coffer dams or bunds or islands** as may be necessary for piers and abutments foundations, bailing out or pumping water during excavation and until completion etc... complete beyond 1.50m depth upto & including 3m depth.								
	Opp to bus stand	Cum							
	Ch 0 to 15		1	15.00	(0.90+0.6)/2	0.60	6.75		
	15 to 30		1	15.00	(0.90+0.6)/2	0.60	6.75		
	30 to 45		1	15.00	(0.90+0.6)/2	0.60	6.75		
	45 to 55		1	10.00	(0.90+0.6)/2	0.60	4.50		
	CD at Chikkabanavara Ry stn road	Cum	1	12.00	(0.90+0.6)/2	0.60	5.40		
4					Total		30.15		
2	Dismantling of Existing Structures like Culverts,Bridges,Retaining Walls and other structures comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding where ever necessary,sorting the dismantled material,disposal of unserviceable material and stacking the seviceable material with all lifts complete as per specifications.(Prestressed/ reinforced cement concrete grade M20 and above)								
	Existing CD at Chikkabanavara Ry stn road	Cum	1	7.00	3.40	0.30	7.14		
	CC pavement at bus stand		1	60.00	4.50	0.35	94.50		
2						Total	101.64		
1	**Dismantling of existing structures like culverts, bridges, retaining walls and other structure** comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications, iii) Dismantling Stone Masonry. A. Rubble Stone masonry in lime mortar. MORTH Specification No. 202 KSRRB M200- 15.2. -do- B. **Rubble stone masonry** in cement mortar.								
	Existing CD at Chikkabanavara Ry stn road	Cum	2	7.00	0.45	1.20	7.56		
1						Total	7.56		

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Sl. No.	Description	Unit	No.	L	B	D	Qty		
	Measurements recorded on 24/05/2017								
5	**Excavation in marshy soil** upto 3m depth for foundation of structures as per drawing and technical specifications, removing the excavated stuf to a lead of 15m, including dewatering, shoring, refilling trenches in 250mm layers, wherever necessary watering and ramming, including cost of all materials, labour complete as per specifications. V. **Marshy Soil - B Mechanical means**								
	CD at Chikkabanavara Ry stn road	Cum	1	10.00	2.50	1.20	**30.00**		
5						**Total**	**30.00**		
	Measurements recorded on 26/05/2017								
6	Earth work in **excavation for foundation** of structures such as culverts, bridges etc., as per drawing and technical specifications,including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material complete as per specifications **in Ordinary soil - B. Mechanical Means** (i) Depth upto 3m MORTH Specification No. 304								
	Opp to bus stand	Cum							
	Ch 0 to 15		1	15.00	(4.5+3.6)/2	2.65	160.99		
	15 to 30		1	15.00	(4.5+3.6)/2	2.65	160.99		
	30 to 45		1	15.00	(4.5+3.6)/2	2.65	160.99		
	45 to 52		1	7.00	(4.5+3.6)/2	2.65	75.13		
	CD at Chikkabanavara Ry stn road	Cum	1	10.00	4.80	0.80	38.40		
6						**Total**	**596.50**		
	Measurements recorded on 27/05/2017								
7	Providing and **filling in foundation with Granite/trap broken metal** 100mm and down size, with approved sand including hand packing, ramming,watering, including cost of all materials and labour with all lead and lift.complete as per specifications								
	Opp to bus stand	Cum							
	Ch 0 to 15		1	15.00	3.60	0.30	16.20		
	15 to 30		1	15.00	3.60	0.30	16.20		
	30 to 45		1	15.00	3.60	0.30	16.20		
	45 to 52		1	7.00	(3.4+3.0)/2	0.30	6.72		
	CD at Chikkabanavara Ry stn road	Cum	1	10.00	4.80	0.30	14.40		
7						**Total**	**69.72**		

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Sl No.	Description	Unit	No.	L	B	D	Qty		
	Measurements recorded on 29/05/2017								
8	**Plain Cement Concrete M10** with OPC cement @ 220 kgs, with crushed 40mm and down size graded metal coarse aggregates @0.84 Cum and fine aggregates @ 0.56Cum, in foundation mechanically mixed placed in foundation and compacted by vibration including curing for 14 days complete as per specifications MORTH Specification No.2100								
	Opp to bus stand	Cum							
	Ch 0 to 15		1	15.00	3.60	0.15	8.10		
	15 to 30		1	15.00	3.60	0.15	8.10		
	30 to 45		1	15.00	3.60	0.15	8.10		
	45 to 52		1	7.00	(3.4+3.0)/2	0.15	3.36		
	CD at Chikkabanavara Ry stn road	Cum	1	8.00	4.80	0.15	5.76		
8						Total	33.42		
	Measurements recorded on 30/05/2017								
14	Supplying,fitting and placing **TMT bar reinforcement in sub-structure** complete as per drawing and technical specifications complete as per specifications. TMT Bars Fe 500								
	Opp to bus stand						8.3675	8.35	
	CD at Chikkabanavara Ry						3.1487	3.13	
14						Total	11.5161	11.48	
11	**Plain / Reinforced cement concrete in Open foundation with OPC cement design mix M 30** @360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @0.46cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008, including cost of all material,HOM of machinery,labour curing etc., complete with all lead and lifts, as per drawing and technical specification with Batching Plant, Transit Mixer and Concrete Pump								
	Opp to bus stand	Cum							
	Ch 0 to 15		1	15.00	3.60	0.30	16.20		
	15 to 30		1	15.00	3.60	0.30	16.20		
	30 to 45		1	15.00	3.60	0.30	16.20		
	45 to 52		1	7.00	(3.4+3.0)/2	0.30	6.72		
	CD at Chikkabanavara Ry stn road	Cum	1	10.00	4.50	0.35	15.75		
11						Total	71.07		

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Construction of RCC culvert & U Shape drain for secondary SWD in Mallasandra Ward No:13

Measurements recorded on 30/05/2017

Box drain opposite to Mallasandra bus stand

Raft and wall

Ch: 0 to 30m

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
RAFT									
1	2	16	1	240	3.40	816.00	1.58	1289.28	
2	3	10	1	17	30.00	510.00	1.59	811.09	Raft Bar
3	1	12	1	167	4.40	734.80	0.62	306.20	Distribution
4	4	10	1	17	30.00	510.00	0.89	653.97	Raft Bar
5		12	1	45	1.50	67.50	0.62	306.20	Distribution
wall							0.89	60.08	Chair
6	6	12	2	150	2.20	660.00	0.89	587.40	Inner Wall rod
7	9	10	2	9	30.00	540.00	0.62	334.80	Distribution
8	7	12	2	167	3.00	1002.00	0.89	891.78	Outer Wall rod
9	8	10	2	9	30.00	540.00	0.62	334.80	Distribution
10		10	2	30	1.00	60.00	0.62	37.20	U bar
							Total	4829.87	Kg
							Total	4.83	MT

Box drain opposite to Mallasandra bus stand

Raft and wall

Ch: 30 to 52m

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
RAFT									
1	2	16	1	176	3.40	598.40	1.59	951.46	Raft Bar
2	3	10	1	17	22.00	374.00	0.62	231.88	Distribution
3	1	12	1	122	4.40	536.80	0.89	477.75	Raft Bar
4	4	10	1	17	22.00	374.00	0.62	231.88	Distribution
5		12	1	33	1.50	49.50	0.89	44.06	Chair
wall									
6	6	12	2	110	2.20	484.00	0.89	430.76	Inner Wall rod
7	9	10	2	9	22.00	396.00	0.62	245.52	Distribution
8	7	12	2	122	3.00	732.00	0.89	651.48	Outer Wall rod
9	8	10	2	9	22.00	396.00	0.62	245.52	Distribution
10		10	2	22	1.00	44.00	0.62	27.28	U bar
							Total	3537.58	Kg
							Total	3.54	MT

Culvert at Chikkabanavara Ry stn road

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
RAFT									
1	1	16	1	56	5.80	324.80	1.59	515.43	Raft Bar
2	3	10	1	22	10.00	220.00	0.62	136.40	Distribution
3	2	16	1	100	4.20	420.00	1.59	667.80	Raft Bar
4	4	10	1	22	10.00	220.00	0.62	136.40	Distribution
5	5	10	2	57	2.00	228.00	0.62	141.36	Haunch
6		16	1	15	1.50	22.50	1.59	35.78	Chair
wall									
7	6	12	2	56	2.00	224.00	0.89	199.36	Inner Wall rod
8	9	10	2	7	10.00	140.00	0.62	86.80	Distribution
9	7	16	2	56	4.60	515.20	1.59	819.17	Outer Wall rod
10	8	10	2	7	10.00	140.00	0.62	86.80	Distribution
11	14	10	4	50	1.20	240.00	0.62	148.80	Haunch
12		10	2	50	2.60	260.00	0.62	161.20	Bracket Bar
13		10	2	10	1.00	20.00	0.62	12.40	U bar
							Total	3148.70	Kg
							Total	3.15	MT

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Sl. No.	Description	Unit	No.	L	B	D	Qty		
	Measurements recorded on 03/06/2017								
12	**Design mix M30 sub structure** with OPC cement @360kgs. with 20mm and down size graded granite metal coarse aggregates @0.69Cum and fine aggregates @0.46Cum with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008 upto 5 mtrs. Upto 5 Mtrs height								
	Opp to bus stand	Cum							
	Ch 0 to 15		2	15.00	0.30	1.50	13.50		
	15 to 30		2	15.00	0.30	1.50	13.50		
	30 to 45		2	15.00	0.30	1.55	13.95		
	45 to 52		2	7.00	0.30	1.60	6.72	C+F C	
	CD at Chikkabanavara Ry stn road	Cum	2	10.00	0.30	1.80	10.80		3/6/17
12							Total 58.47		
	Measurements recorded on 12/06/2017								
15	Supplying,fitting and placing **TMT bar reinforcement in super-structure** complete as per drawing and technical specifications complete as per specifications. TMT Bars Fe 500								
	Opp to bus stand						4.5809	4.58	
	CD at Chikkabanavara Ry						2.9150	2.90	
15							Total 7.4959	7.46	
16	Providing weep holes in Brick masonry I Plain I Reinforced concrete abutment, wing wall I return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical Specifications complete as per specifications MORTH Specification No.2706 & 2200								
	Opp to bus stand	Cum	2	30.00		0.30	18.00		
	CD at Chikkabanavara Ry stn road		2	5.00		0.30	3.00		
16							Total 21.00		
13	**Furnishing and Placing Reinforced/ Prestressed cement concrete in super-structure as per drawing and Technical Specification complete as per specifications. D. RCC / PSC with OPC cement design mix M30 @ 360kgs,** with 20mm and down size graded granite metal coarse aggregates @0.66cum and fine aggregates @ 0.46cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008, Case - II : Using Batching Plant, Transit Mixer & Concrete Pump MORTH Specification No. 1500,1600 & 1700. Height upto 5 m								
	Opp to bus stand	Cum							
	Ch 0 to 15		1	15.00	3.10	0.30	13.95		
	15 to 30		1	15.00	3.10	0.30	13.95		
	30 to 45		1	15.00	3.10	0.30	13.95	C+F C	
	45 to 52		1	7.00	(3.1+2.8)/2	0.30	6.20		
	CD at Chikkabanavara Ry stn road	Cum	1	12.20	3.70	0.35	15.80		12/6/17
13							Total 63.85		

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Measurements recorded on 12/06/2017

Ch: 0 to 30m

Box drain opposite to Mallasandra bus stand

Slab

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
Slab							1.58	1289.28	
1	10	16	1	240	3.40	816.00	1.59	1297.44	Slab Bar
2	12	10	1	17	30.00	510.00	0.62	316.20	Distribution
3	11	12	1	167	4.40	734.80	0.89	653.97	Slab Bar
4	13	10	1	17	30.00	510.00	0.62	316.20	Distribution
5		12	1	45	1.50	67.50	0.89	60.08	Chair
							Total	2643.89	Kg 2635.73
							Total	2.64	MT
									2.63

Ch: 30 to 52m

Box drain opposite to Mallasandra bus stand

Slab

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
Slab							1.58	945.47	
1	10	16	1	176	3.40	598.40	1.59	951.46	Slab Bar
2	12	10	1	17	22.00	374.00	0.62	231.88	Distribution
3	11	12	1	122	4.40	536.80	0.89	477.75	Slab Bar
4	13	10	1	17	22.00	374.00	0.62	231.88	Distribution
5		12	1	33	1.50	49.50	0.89	44.06	Chair
							Total	1937.02	Kg 1931.04
							Total	1.94	MT
									1.93

Culvert- Slab

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
Slab							1.58	1089.72	
1	10	16	1	121	5.70	689.70	1.59	1096.62	Slab Bar
2	12	10	1	21	12.10	254.10	0.62	157.54	Distribution
3	11	16	1	67	5.70	381.90	1.59 1.58	607.22 603.30	Slab Bar
4	13	10	1	21	12.10	254.10	0.62	157.54	Distribution
5		12	2	50	1.00	100.00	0.89	89.00	Bracket
6		12	2	4	8.00	64.00	0.89	56.96	Bracket dist
7		16	2	4	2.00	16.00	1.59 1.58	25.44 25.28	Beam
8		12	1	18	1.50	27.00	0.89	24.03	Chair
Approach Slab-LHS									
1		10	2	50	2.80	280.00	0.62	173.60	Slab Bar
2		10	2	13	10.00	260.00	0.62	161.20	Distribution
Approach Slab-RHS									
1		10	2	50	3.10	310.00	0.62	192.20	Slab Bar
2		10	2	14	10.00	280.00	0.62	173.60	Distribution
							Total	2914.96	Kg 2904.07
							Total	2.91	MT
									2.90

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Sl. No.	Description	Unit	No.	L	B	D	Qty
	Measurements recorded on 19/06/2017						
17	Providing and laying of **Filter media with granular** materials/stone crushed aggregates satisfying the requirements laid down in clause 2500.4.2.2 of MORTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification complete as per specifications with all lead and lifts, etc., after breaking of clods complete as per specifications and as per direction of Engineer in-charge.page no 229/28.13						
	Opp to bus stand	Cum					
	Ch 0 to 15		2	15.00	0.30	1.20	10.80
	15 to 30		2	15.00	0.30	1.20	10.80
	30 to 45		2	15.00	0.30	1.20	10.80
	45 to 52		2	7.00	0.30	1.20	5.04
	CD at Chikkabanavara Ry stn road	Cum	2	10.00	0.30	1.20	7.20
17						**Total**	**44.64**
24	Reinforced cement concrete **M30 approach slab** including reinforcement @ 50 kg/Cum and formwork complete as per drawing and Technical specification complete as per specifications MORTH Specification No. 1500,1600,1700 & 2704						
	CD at Chikkabanavara Ry	LHS	1	10.00	2.70	0.20	5.40
		RHS	1	10.00	2.90	0.20	5.80
24						**Total**	**11.20**
	Measurements recorded on 21/06/2017						
18	Collecting, Conveying and disposal of surplus/excavated earth including Stone Boulder / Stone aggregates /Sand/ Kanker / Moorum **to designated dumping site** (15.0 kms) as directed by the engineer-in-charge .						
	(PW,P& IWTD, SR 15-16, P-133, I.No-17.1						
	Qty from item No 3 recorded on 15/05/2017	Pg 1 of 30					420.75
	Qty from item No 1 recorded on 20/05/2017	Pg 2 of 30					7.56
	Qty from item No 2 recorded on 20/05/2017	Pg 2 of 30					101.64
	Qty from item No 5 recorded on 24/05/2017	Pg 3 of 30					30.00
	Qty from item No 6 recorded on 26/05/2017- 80%	Pg 3 of 30					477.20
	Qty from item No 17 recorded on 19/06/2017	Pg 8 of 30					44.64
18	Qty as in (item No.1+2+3+5+6-17)=	Cum		Total			992.51

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Sl. No.	Description	Unit	No.	L	B	D	Qty		
	Measurements recorded on 05/07/2017								
2	Dismantling of Existing Structures like Culverts,Bridges,Retaining Walls and other structures comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding where ever necessary,sorting the dismantled material,disposal of unserviceable material and stacking the seviceable material with all lifts complete as per specifications.(Prestressed/ reinforced cement concrete grade M20 and above)								
	Existing CD at Lakeview layout		1	6.00	2.90	0.30	5.22		
2						Total	5.22		
1	**Dismantling of existing structures like culverts, bridges, retaining walls and other structure** comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications, iii) Dismantling Stone Masonry. A. Rubble Stone masonry in lime mortar. MORTH Specification No. 202 KSRRB M200- 15.2. -do- B. **Rubble stone masonry** in cement mortar.								
	Existing CD at Lakeview layout	Cum	2	6.00	0.45	1.20	6.48		
1						Total	6.48		
4	**Diversion of water course by providing coffer dams or bunds or islands** as may be necessary for piers and abutments foundations, bailing out or pumping water during excavation and until completion etc... complete beyond 1.50m depth upto & including 3m depth.								
	Lakeview layout	Cum							
	Ch -2 to 15		1	17.00	(0.90+0.6)/2	0.60	7.65		
	15 to 30		1	15.00	(0.90+0.6)/2	0.60	6.75		
	30 to 45		1	15.00	(0.90+0.6)/2	0.60	6.75		
	45 to 60		1	15.00	(0.90+0.6)/2	0.60	6.75		
	60 to 75		1	15.00	(0.90+0.6)/2	0.60	6.75		
	75 to 90		1	15.00	(0.90+0.6)/2	0.60	6.75		
	90 to 102		1	12.00	(0.90+0.6)/2	0.60	5.40		
	CD at Lakeview layout		1	8.00	(0.90+0.6)/2	0.60	3.60		
4						Total	50.40		

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Sl. No.	Description	Unit	No.	L	B	D	Qty
	Measurements recorded on 07/07/2017						
5	**Excavation in marshy soil** upto 3m depth for foundation of structures as per drawing and technical specifications, removing the excavated stuf to a lead of 15m, including dewatering, shoring, refilling trenches in 250mm layers, wherever necessary watering and ramming, including cost of all materials, labour complete as per specifications. V. **Marshy Soil - B Mechanical means**						
	Lakeview layout	Cum					
	Ch 0 to 15		1	15.00	2.50	0.75	**28.13**
	15 to 30		1	15.00	2.50	0.75	**28.13**
	30 to 45		1	15.00	2.50	0.75	**28.13**
	45 to 60		1	15.00	2.50	0.75	**28.13**
	60 to 75		1	15.00	2.50	0.75	**28.13**
	75 to 90		1	15.00	2.50	0.75	**28.13**
	90 to 102		1	12.00	2.50	0.75	**22.50**
	Measurements recorded on 08/07/2017						
	CD at Lakeview layout		1	9.40	2.00	0.75	**14.10**
5						**Total**	**205.38**
	Measurements recorded on 10/07/2017						
6	Earth work in **excavation for foundation** of structures such as culverts, bridges etc., as per drawing and technical specifications,including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material complete as per specifications **in Ordinary soil - B. Mechanical Means** (i) Depth upto 3m MORTH Specification No. 304						
	Lakeview layout	Cum					
	Ch 0 to 15		1	15.00	(3.4+3.1)/2	1.05	51.19
	15 to 30		1	15.00	3.10	1.20	55.80
	30 to 45		1	15.00	3.70	1.20	66.60
	45 to 60		1	15.00	3.10	1.20	55.80
	60 to 75		1	15.00	3.30	1.20	59.40
	75 to 90		1	15.00	(3.3+3)/2	1.20	56.70
	90 to 102		1	12.00	(3+2.85)/2	1.20	42.12
	Measurements recorded on 11/07/2017						
	CD at Lakeview layout		1	9.40	(2.5+3.5)/2	1.45	40.89
6						**Total**	**428.50**

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Sl. No.	Description	Unit	No.	L	B	D	Qty
	Measurements recorded on 12/07/2017						
7	Providing and **filling in foundation with Granite/trap broken metal** 100mm and down size, with approved sand including hand packing, ramming,watering, including cost of all materials and labour with all lead and lift.complete as per specifications						
				B	Avg B		
	Lakeview layout	Cum		3.40			
	Ch 0 to 15	1	15.00	3.10	3.25	0.30	14.63
	15 to 30	1	15.00	3.10	3.10	0.30	13.95
	30 to 45	1	15.00	3.70	3.40	0.30	15.30
	45 to 60	1	15.00	3.10	3.40	0.30	15.30
	60 to 75	1	15.00	3.80	3.45	0.30	15.53
	75 to 90	1	15.00	3.10	3.45	0.30	15.53
	90 to 102	1	12.00	3.20	3.15	0.30	11.34
	CD at Lakeview layout		1	9.40	(3.7+3.6)/2	0.30	10.29
7						**Total**	**111.87**
	Measurements recorded on 13/07/2017						
8	**Plain Cement Concrete M10** with OPC cement @ 220 kgs, with crushed 40mm and down size graded metal coarse aggregates @0.84 Cum and fine aggregates @ 0.56Cum, in foundation mechanically mixed placed in foundation and compacted by vibration including curing for 14 days complete as per specifications MORTH Specification No.2100						
				B	Avg B		
	Lakeview layout	Cum		3.40			
	Ch 0 to 15	1	15.00	3.10	3.25	0.15	7.31
	15 to 30	1	15.00	3.10	3.10	0.15	6.98
	30 to 45	1	15.00	3.70	3.40	0.15	7.65
	45 to 60	1	15.00	3.10	3.40	0.15	7.65
	60 to 75	1	15.00	3.80	3.45	0.15	7.76
	75 to 90	1	15.00	3.10	3.45	0.15	7.76
	90 to 102	1	12.00	3.20	3.15	0.15	5.67
	CD at Lakeview layout		1	9.40	(3.7+3.6)/2	0.15	5.15
8						**Total**	**55.93**

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Description	Unit	No.	L	B	D	Qty		
easurements recorded on 14/07/2017								
upplying,fitting and placing **TMT bar reinforcement in sub-structure** complete as per awing and technical specifications complete as per specifications. TMT Bars Fe 500								
akeview layout						21.5902	21.59	
D at Lakeview layout						2.8798	2.87	
					Total	24.4700	24.39	
Diversion of water course by providing coffer dams or bunds or islands as may be necessary for piers and abutments foundations, bailing out or pumping water during excavation and until completion etc... complete beyond 1.50m depth upto & including 3m depth.								
D/s of Lakeview layout CD	Cum							
Ch 0 to 15		1	15.00	(0.90+0.6)/2	0.60	**6.75**		
15 to 30		1	15.00	(0.90+0.6)/2	0.60	**6.75**		
30 to 45		1	15.00	(0.90+0.6)/2	0.60	**6.75**		
45 to 60		1	15.00	(0.90+0.6)/2	0.60	**6.75**		
60 to 75		1	15.00	(0.90+0.6)/2	0.60	**6.75**		
75 to 90		1	15.00	(0.90+0.6)/2	0.60	**6.75**		
90 to 102		1	12.00	(0.90+0.6)/2	0.60	**5.40**		
					Total	45.90		

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Measurements recorded on 14/07/2017

Culvert at Lakeview layout

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
RAFT							1.58	460.09	
1	1	16	1	52	5.60	291.20	1.59	463.01	Raft Bar
2	3	10	1	21	9.35	196.35	0.62	121.74	Distribution
3	2	16	1	94	4.00	376.00	1.59 1.58	597.84 594.08	Raft Bar
4	4	10	1	21	9.35	196.35	0.62	121.74	Distribution
5	5	10	2	53	2.00	212.00	0.62	131.44	Haunch
6		16	1	14	1.50	21.00	1.59 1.58	33.39 33.18	Chair
wall									
7	6	12	2	52	2.00	208.00	0.89	185.12	Inner Wall rod
8	9	10	2	7	9.35	130.90	0.62	81.16	Distribution
9	7	16	2	52	4.60	478.40	1.59 1.58	760.66 735.87	Outer Wall rod
10	8	10	2	7	9.35	130.90	0.62	81.16	Distribution
11	14	10	4	47	1.20	225.60	0.62	139.87	Haunch
12		10	2	47	2.60	244.40	0.62	151.53	Bracket Bar
13		10	2	9	1.00	18.00	0.62	11.16	U bar
							Total	2879.80	Kg 2868.14
							Total	2.88	MT
								2.87	

Lakeview layout CH - 0M to 30m

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
RAFT							1.58	1294.65	
1	1	16	1	241	3.40	819.40	1.59	1302.85	Raft Bar
2	4	10	1	16	30.00	480.00	0.62	297.60	Distribution
3	2	12	1	201	3.20	643.20	0.89	572.45	Raft Bar
4	4	10	1	14	30.00	420.00	0.62	260.40	Distribution
5		12	1	45	1.50	67.50	0.89	60.08	Chair
wall									
6	3	12	2	151	2.90	875.80	0.89	779.46	Inner Wall rod
7	5	10	2	13	30.00	780.00	0.62	483.60	Distribution
8	1	16	2	241	3.00	1446.00	1.59	2299.14 2284.68	Outer Wall rod
9	5	10	2	13	30.00	780.00	0.62	483.60	Distribution
10		10	2	30	1.00	60.00	0.62	37.20	U bar
							Total	6576.37	Kg 6553.72
							Total	6.58	MT
								6.55	

Lakeview layout CH - 30M to 60m

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
RAFT							1.58	1942.34	
1	1	16	1	241	3.00	723.00	1.59	1149.57	Raft Bar
2	4	10	1	13	30.00	390.00	0.62	241.80	Distribution
3	2	12	1	201	2.80	562.80	0.89	500.89	Raft Bar
4	4	10	1	12	30.00	360.00	0.62	223.20	Distribution
5		12	1	45	1.50	67.50	0.89	60.08	Chair
wall									
6	3	12	2	151	2.90	875.80	0.89	779.46	Inner Wall rod
7	5	10	2	13	30.00	780.00	0.62	483.60	Distribution
8	1	16	2	241	3.00	1446.00	1.59 1.58	2299.14 2284.68	Outer Wall rod
9	5	10	2	13	30.00	780.00	0.62	483.60	Distribution
10		10	2	30	1.00	60.00	0.62	37.20	U bar
							Total	6258.54	Kg 6236.85
							Total	6.26	MT
								6.24	

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Lakeview layout — CH - 60M to 90m

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
RAFT							1.58	1104.26	
1	1	16	1	241	2.90	698.90	1.59	1111.25	Raft Bar
2	4	10	1	13	30.00	390.00	0.62	241.80	Distribution
3	2	12	1	201	2.70	542.70	0.89	483.00	Raft Bar
4	4	10	1	12	30.00	360.00	0.62	223.20	Distribution
5		12	1	46	1.50	69.00	0.89	61.41	Chair
wall									
6	3	12	2	151	2.90	875.80	0.89	779.46	Inner Wall rod
7	5	10	2	13	30.00	780.00	0.62	483.60	Distribution
8	1	16	2	241	3.00	1446.00	1.59 1.58	2299.14 2284.68	Outer Wall rod
9	5	10	2	13	30.00	780.00	0.62	483.60	Distribution
10		10	2	28	1.00	56.00	0.62	34.72	U bar
							Total	6201.19	Kg 6179.73
							Total	6.20	MT
								6.18	

Lakeview layout — CH - 90M to 102m

Sl No	Bar no	Dia	Side	No of Bars	Cut Length of Bar	Total Length of Bars	Unit Weight	Total Weight	Remarks.
RAFT							1.58	475.10	
1	1	16	1	97	3.10	300.70	1.59	478.11	Raft Bar
2	4	10	1	14	12.00	168.00	0.62	104.16	Distribution
3	2	12	1	81	2.90	234.90	0.89	209.06	Raft Bar
4	4	10	1	13	12.00	156.00	0.62	96.72	Distribution
5		12	1	18	1.50	27.00	0.89	24.03	Chair
wall									
6	3	12	2	61	2.90	353.80	0.89	314.88	Inner Wall rod
7	5	10	2	13	12.00	312.00	0.62	193.44	Distribution
8	1	16	2	97	3.00	582.00	1.59 1.58	925.38 919.56	Outer Wall rod
9	5	10	2	13	12.00	312.00	0.62	193.44	Distribution
10		10	2	12	1.00	24.00	0.62	14.88	U bar
							Total	2554.11	Kg 2545.27
							Total	2.55	MT
								2.53	

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Sl. No.	Description	Unit	No.	L	B	D	Qty
	Measurements recorded on 15/07/2017						
9	**Plain/reinforcement Cement Concrete design mix M25** with OPC cement @340 kgs, with 20mm and down size graded granite metal coarse aggregates @ 0.70Cum and fine aggregates @0.47Cum with superplastisiser @ 3lts confirming to IS9103-1999 Reaffirmed-2008, **open foundation** complete as per Drawing and Technical Specification with Batching plant, transit mixer and concrete pump. MORTH Specification No. 1500, 1700 & 2100.						
				B	Avg B		
	Lakeview layout	Cum		3.30			
	Ch 0 to 15	1	15.00	3.00	3.15	0.30	14.18
	15 to 30	1	15.00	3.00	3.00	0.30	13.50
	30 to 45	1	15.00	3.60	3.30	0.30	14.85
	45 to 60	1	15.00	3.00	3.30	0.27	13.37
	60 to 75	1	15.00	3.70	3.35	0.28	14.07
	75 to 90	1	15.00	3.00	3.35	0.30	15.08
	90 to 102	1	12.00	3.10	3.05	0.30	10.98
9						**Total**	**96.03**
11	**Plain / Reinforced cement concrete in Open foundation with OPC cement design mix M 30** @360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @0.46cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008, including cost of all material,HOM of machinery,labour curing etc., complete with all lead and lifts, as per drawing and technical specification with Batching Plant, Transit Mixer and Concrete Pump						
	CD at Lakeview layout		1	9.40	(3.7+3.6)/2	0.35	12.01
11						**Total**	**12.01**
5	**Excavation in marshy soil** upto 3m depth for foundation of structures as per drawing and technical specifications, removing the excavated stuf to a lead of 15m, including dewatering, shoring, refilling trenches in 250mm layers, wherever necessary watering and ramming, including cost of all materials, labour complete as per specifications. V. **Marshy Soil - B Mechanical means**						
	Lakeview layout	Cum					
	D/s						
	Ch 0 to 15		1	15.00	2.50	0.60	**22.50**
	15 to 30		1	15.00	2.50	0.60	**22.50**
	30 to 45		1	15.00	2.50	0.60	**22.50**
	45 to 60		1	15.00	2.50	0.60	**22.50**
	60 to 75		1	15.00	2.50	0.60	**22.50**
	75 to 90		1	15.00	2.50	0.60	**22.50**
	90 to 103		1	13.00	2.50	0.60	**19.50**
5						**Total**	**154.50**

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